

# **COBRA Invitational 2018**

## **Anatomy and Physiology Test**

Please PRINT School name:

Team number:

Please PRINT name of the students:

1.-----

2.-----

Directions: This is a long test with 82 questions with last question 3 questions as Tie breakers. Please pace yourself accordingly. There are various questions as multiple choices, true or false and fill in the blanks. You can answer by circling the correct answer in multiple choice and writing clear 'T' or 'F' for corresponding true or false statement. Each blank is a 1 point. The total score of this test is 100 points. The questions are on both side of the paper.

### COBRA Anatomy and Physiology Test

1) What are the names of the three salivary glands?

\_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

2) The mouth is responsible for partially digesting what type of food product?

\_\_\_\_\_

3) The epiglottis closes over the \_\_\_\_\_ to prevent food from going down the “wrong tube”.

4) If a person has all of their teeth, they would have \_\_\_\_\_ incisors, \_\_\_\_\_ cuspids, \_\_\_\_\_ bicuspid, and \_\_\_\_\_ molars.

5) What is the name of the structure in the month that is ultimately responsible for getting the epiglottis to close over the trachea?

\_\_\_\_\_

6) Hydrochloric acid converts \_\_\_\_\_ to the active form called pepsin.

7) The muscular ridges on the inside of the stomach that allow the stomach to stretch when food is present are called \_\_\_\_\_.

8) When food is in the mouth it is called a bolus. But, when it enters the stomach and mixes with acid it is called acidic \_\_\_\_\_.

9) The esophageal hiatus is an opening in the \_\_\_\_\_, which allows the esophagus to pass to enter into the stomach.

10) The first part of the small intestine is called the \_\_\_\_\_.

11) Which part of the small intestine is connected to the stomach and which part is connected to the large intestine?

\_\_\_\_\_

12) The small, finger-like projections in the small intestine are called \_\_\_\_\_.

13) The pH of acid coming from the stomach is about \_\_\_\_\_ and the pH in the small intestine is about \_\_\_\_\_.

14) What is the name of the muscular action that moves the food through the esophagus, through the stomach, and through the small intestine?

\_\_\_\_\_

15) The largest salivary gland is the \_\_\_\_\_ and is located near the \_\_\_\_\_ muscle.

16) When the \_\_\_\_\_ cells of the taste buds are stimulated by dissolved food, they will send signals to the brain for the interpretation of flavor.

17) The first part of the large intestine is called the \_\_\_\_\_.

18) The stomach is made of the cardia region, the fundus region, and the pylorus region. Which of those regions attach to the duodenum of the small intestine?

\_\_\_\_\_

19) The hepatopancreatic sphincter is joined by the tube from the pancreas and the tube from the gall bladder and liver. What are those two tubes called?

\_\_\_\_\_ and \_\_\_\_\_

20) Bile is produced in the \_\_\_\_\_ and stored in the \_\_\_\_\_.

21) \_\_\_\_\_ will emulsify fat so the enzyme, \_\_\_\_\_ can do a more efficient job of digesting the fat.

22) What is the name of the tube that drains bile from the gallbladder into the common bile duct? \_\_\_\_\_

23) Name the hormone that causes the gall bladder to release bile.

\_\_\_\_\_

24) Name the hormone that causes the release of buffers from the pancreas.

\_\_\_\_\_

25) What hormone causes the hepatopancreatic sphincter to open?

\_\_\_\_\_

26) The main job of the large intestine is to reabsorb \_\_\_\_\_ back into the bloodstream.

27) When the \_\_\_\_\_ sphincter fails to close properly, some stomach contents can enter into the esophagus. This is known as esophageal reflux.

28) Rapid peristalsis in the large intestine could result in what medical condition?

\_\_\_\_\_

29) Lactose intolerance is a condition where the patient is not producing enough of what enzyme?

\_\_\_\_\_

30) A patient with gallbladder problems may have difficulty digesting which type of food substance? \_\_\_\_\_

31. Which of these statements concerning the respiratory organs is NOT true?

- a. The right lung consists of two lobes.
- b. The trachea branches into the left and right principal bronchi.
- c. Air is warmed as it is breathed through the nose.
- d. The lungs are compartmentalized

32. What structure covers the immediate surface of the lungs?

- a. Visceral Pleura
- b. The Intercostals
- c. Parietal Pleura
- d. Surfactant

33. What ion is formed when carbon dioxide undergoes a chemical reaction in the blood?

- a. carbonic anhydrase
- b. Hydroxide ion
- c. carbonic acid
- d. bicarbonate ion

Matching Terminology

\_\_\_\_ 34. Dyspnea

\_\_\_\_ 35. Hypoxia

\_\_\_\_ 36. Hypercapnia

\_\_\_\_ 37. Hypoxemia

\_\_\_\_ 38. Cyanosis

a. A lower than normal oxygen level in tissue

b. rise in CO<sub>2</sub>(Carbon Dioxide) levels in blood

c. Lower than normal oxygen level in arterial blood

d. Low level of oxygen in blood causing bluish skin

e. Feeling of difficulty in breathing

39. An acinus is

- a. the next-smallest division of a lung after lobes
- b. another name for the lobes of the lung
- c. latin for „breath“, refers to the volume of air inhaled at rest
- d. a group of alveoli which are connected immediately to the same terminal bronchiole

40. Which is not a function of the respiratory system?

- a. provides carbon dioxide to the tissues and removes oxygen
- b. vocalization
- c. control of blood pH
- d. allows forceful exhalation and other air movements to protect the body from foreign objects

41. Arrange the following in order of the number there are in the body, from least to greatest

- I. Alveoli
- II. Lobar bronchi
- III. Trachea
- IV. Respiratory Bronchioles

- a. III, IV, II, I
- b. I, III, II, IV
- c. they are all the same
- d. III, II, IV, I
- e. I, II, III, IV

42. Choose the true statement.

- a. air moving into the lungs is expiration
- b. air moving out of the lungs is inspiration
- c. internal respiration consists of gas exchange between the alveoli and the blood
- d. oxygenated blood passes through the left side of the heart after passing through pulmonary veins.

(43-46) Matching:

- |   |                                   |
|---|-----------------------------------|
| 43. Movement of air into and out of lungs       | a. Internal Respiration           |
| 44. Gas exchange between blood and tissues      | b. External Respiration           |
| 45. Movement of gases between tissues and lungs | c. Pulmonary Ventilation          |
| 46. Gas exchanges between the blood and alveoli | d. Transport of Respiratory Gases |

47. Which of the following are true?

- I. Inspiration is a passive process that requires energy in the form of muscular action
- II. Expiration is a passive process that takes advantage of elastic recoil
- III. Inspiration is an active process

- a. I, II, and III
- b. None
- c. II only
- d. II and III

48. What is the percent saturation of oxygen in blood in order for it to be considered oxygenated?

- a. 75%
- b. 97%
- c. 80%
- d. 95%

49. What component of red blood cells binds to oxygen molecules?

- a. Plasma
- b. Hemoglobin
- c. Erythrocyte
- d. Leukocyte

50. Choose the correct choice depicting the path of food after mastication leading up to digestion.

- I. Stomach
- II. Pharynx
- III. Large Intestine
- IV. Esophagus
- V. Small Intestine

- a. I, II, III, IV, V
- b. V, IV, III, II, I
- c. II, IV, I, V, III
- d. II, IV, I, III, V

51. Some causes of lactose intolerance can be attributed to:

- I. Bowel Surgery
- II. Infection in small intestine(bacterial, or viral)
- III. Celiac Sprue(Intestinal disease)

- a. I and II
- b. II and III
- c. I, II, and III
- d. None of the above

52. Appendicitis is the inflammation of which of the following descriptions:

- a. Structure consisting of skeletal muscle and attached to the stomach
- b. Structure consisting of skeletal muscle and attached to the large intestine
- c. Structure consisting of smooth muscle and attached to the small intestine
- d. Structure consisting of smooth muscle and attached to the large intestine

53. An increase in one of the following would be an indicator of inflammation in an organ during a CBC(Complete Blood Count)

- a. Red Blood Cells
- b. Plasma
- c. White Blood Cells
- d. Hemoglobin

54. Identify the correct choice indicating the three types of diarrhea:

- a. gastric, pancreatic, insulenic
- b. pulmonary, gastric, peritoneal
- c. Osmotic, Secretory, Exudative
- d. Phlebotic, Somatic, Nephric

55. Which over the counter is NOT used for the treatment for diarrhea

- a. Pepto-Bismol
- b. Imodium A-D
- c. Kaopectate
- d. Albuterol

56. Which is NOT one cause of COPD(Chronic Obstructive Pulmonary Disease)

- a. Airways become too wide, letting too much air through
- b. Walls between air sacs are destroyed
- c. Airways and air sacs lose elasticity
- d. Walls of airways inflame

57. Celiac disease destroys the lining of which organ, making it harder for certain parts of the food to be absorbed:

- a. Stomach
- b. Large Intestine
- c. Pancreas
- d. Small Intestine

58. Upon which structure is their dispute upon whether is considered in the Upper or Lower gastrointestinal tract:

- a. duodenum
- b. liver
- c. small intestine
- d. Anus

59. When a pathogen invades the body, it will trigger an immune response due to unique molecules called \_\_\_\_\_. These will lead to the formation of very specific, matching \_\_\_\_\_ in response to these molecules.

60. Three cells that perform phagocytosis are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

61. Three parts/members of the immune system that will contribute to inflammation include \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

62. The spleen is similar in structure to \_\_\_\_\_, but will filter \_\_\_\_\_ instead of lymph.

State whether each of the following is true (T) or false

63. \_\_\_\_\_ Lymph comes from fluid leaked out of blood vessels.

64. \_\_\_\_\_ Cells are the only features that make up our internal immune system.

65. \_\_\_\_\_ An APC (antigen presenting cell) will directly interact with mast cells.

66. \_\_\_\_\_ When lymph nodes enlarge, it is because cells in the node are dividing in response to an antigenic stimulus.

67. \_\_\_\_\_ Dendritic cells link innate and adaptive immunity.

68. \_\_\_\_\_ Autoimmunity is when your immune system recognizes your tissues and does not react.

69. \_\_\_\_\_ Secondary lymphoid organs allow interactions that will trigger the start of an innate immune response.

70. \_\_\_\_\_ The covering of the eyes is the most frequent portal of entry for pathogens.

71. \_\_\_\_\_ Another word for antigen is immunoglobulin.



State which of the three lines of defense (1st, 2nd, or 3rd) each of the following is a part of.

- 72. \_\_\_\_\_ Skin
- 73. \_\_\_\_\_ Plasma/B cell
- 74. \_\_\_\_\_ Neutrophil
- 75. \_\_\_\_\_ Lysozyme
- 76. \_\_\_\_\_ Inflammation
- 77. \_\_\_\_\_ Antibodies
- 78. \_\_\_\_\_ T helper cells
- 79. \_\_\_\_\_ Normal microbiota

Tie breaker:

80. During forceful inspiration, the diaphragm \_\_\_\_\_ and the external intercostals \_\_\_\_\_ the rib cage, increasing the volume of the thoracic cavity.

81) Innate immunity...

- A) is based on recognition of antigens that are specific to different pathogens.
- B) is found only in vertebrate animals.
- C) depends on a newly infected animal's previous exposure to the same pathogen.
- D) is activated immediately upon infection.
- E) utilizes highly specific antigen receptors on B cells.

82) A systemic inflammatory response that is often life-threatening is

- A) aches and dull pain.
- B) increased white blood cell count.
- C) mild fever.
- D) septic shock.
- E) high blood pressure.

